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FINANCIAL LIBERALIZATION IN TURKEY AND THE EVOLUTION OF OWNERSHIP STRUCTURES

A Master's Thesis

by

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To My Family

FINANCIAL LIBERALIZATION IN TURKEY AND THE EVOLUTION OF OWNERSHIP STRUCTURES

The Graduate School of Economics and Social Sciences
of
İhsan Doğramacı Bilkent University

by

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FINANCIAL LIBERALIZATION IN TURKEY AND THE EVOLUTION OF OWNERSHIP STRUCTURES
By Atamert Mıhcı

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science in Management.

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ABSTRACT

FINANCIAL LIBERALIZATION IN TURKEY AND THE EVOLUTION OF OWNERSHIP STRUCTURES

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This thesis describes how ownership structures of Turkish listed companies changed from 1986 to 2020. The financial liberalization program, implemented in the 1980s, aimed to increase financial literacy and expand the investor base. The opening of the stock exchange, Istanbul Stock Exchange, (ISE) in 1986 was a part of the financial liberalization program. The opening of a modern stock market aimed to widen the investor base and spread firm control across society. I examine the 40 companies first listed on Istanbul Stock Exchange in 1986. One company is dropped from the sample due to missing data for 1986. Six of the remaining 39 companies had ceased operations by 2020. Thirty-three companies are still in operation in 2020 with 6 of them going private in the interim. Two of the six private companies did not have publicly available ownership data. The largest shareholder, on average, controlled 34 percent, the three largest shareholders 61 percent, and the five largest controlled 65 percent of shares in 1986 in the 31 sample companies. The largest shareholder controlled 59 percent, the three largest shareholders 74 percent, and the five largest controlled 76 percent of shares in 2020. I found that ownership concentration, the measure of how control is concentrated across the largest shareholders, increased in Turkish firms from their first listing in 1986 to 2020. Contrary to the aims of the financial liberalization program, the results suggest, ownership became more concentrated in the hands of the largest shareholders.

Keywords: Ownership concentration, Ownership structure, Financial Liberalization

ÖZET

TÜRKİYE’DE FİNANSAL LİBERALİZASYON VE ORTAKLIK YAPILARININ DEĞİŞİMİ

Mıhcı, Atamert

Yüksek Lisans. İşletme Bölümü

Tez Danışmanı: Doçent Dr. Ayşe Başak Tanyeri Günsür

August 2023

Bu tez, borsaya kote Türk şirketlerinin ortaklık yapılarının 1986'dan 2020'ye nasıl değiştiğini incelemektedir. Türkiye’de 1980'lerde uygulanmaya başlanan finansal liberalizasyon programı, finansal okuryazarlık oranını arttırmayı ve yatırımcı tabanını büyütmeyi amaçlamaktaydı. 1986 yılında İstanbul Menkul Kıymetler Borsası'nın (İMKB) açılışı da finansal liberalizasyon programının bir parçası olarak gerçekleşti. Türkiye’de modern bir borsanın açılması ile finansal liberalizasyon programı yatırımcı tabanının büyütülmesini ve şirketlerin kontrolünün topluma yayılmasini amaçlamaktaydı. Bu çalışmada İstanbul Menkul Kıymetler Borsası'na 1986 yılında ilk kez kote olan 40 şirket örneklem olarak alınmaktadır. Bir şirket 1986 verilerinin eksikliği sebebi ile örneklemden çıkarılmıştır. 2020 yılına dek kalan 39 şirketten altısı faaliyetlerini durdurdu. 2020 yılında 33 şirket faaliyete devam

ederken, bu şirketlerden 6'sı zaman içerisinde borsaya kote olmaktançıkmıştır. Bu 6 şirketten 2 şirketin ortaklık yapısı verileri ise mevcut değildir. Örneklemde kalan 31 şirketi ele aldığımızda ise 1986'da hisselerin ortalama olarak en büyük hissedarı yüzde 34'ünü, en büyük üç hissedarı yüzde 61'ini ve en büyük beş hissedarı yüzde 65'ini kontrol ediyordu. 2020'de ise en büyük hissedar yüzde 59'a, en büyük üç hissedar yüzde 74'e ve en büyük beş hissedar yüzde 76'ya sahiptir. Bu çalışmada çeşitli hissedarlarda biriken kontrolün kapsamını tanımlamak için kullanılan bir ölçüt olan sahiplik yoğunluğunu kullanarak 1986 ile 2020 yılları arasında sahiplik yoğunluğunun arttığını, dolayısıyla borsanın açılışının şirketlerin sahiplik yoğunluğunu azaltmadığı görülmüştür.

Anahtar Kelimeler: Sahiplik Yoğunluğu, Ortaklık Yapısı, Finansal Liberalizasyon

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CHAPTER I

INTRODUCTION

This thesis investigates the changes in the ownership structure of firms that were first listed on the Turkish stock exchange at the beginning of its operations in 1986. I analyze how ownership concentration evolved throughout the life of Borsa Istanbul. I rely on ownership concentration as a measure of the control rights of the largest shareholders. A high ownership concentration means that the stakes and control of the companies are accumulated in the hands of a few shareholders. A low ownership concentration means that many investors have control over the company.

The world economic conditions and domestic economic crisis led to dramatic changes in Turkish economic policies in the 1970s. Following the 1970s, the Turkish government launched the structural adjustment program. The purpose of the structural adjustment program was to apply the free-market principles. Turkish government intended to institute an open economy that attracts domestic and global investors. The new investors were to replace the state in the equity ownership and management of companies

(Saracoglu, 1996). İstanbul Menkul Kıymetler Borsası, the initial name of the Turkish stock exchange which was renamed as Borsa İstanbul in Turkish in 2013, and Istanbul Stock Exchange (ISE) in English, started its operations in 1986 as a part of the structural adjustments and financial liberalization program of Turkey. The program aimed to lower funding costs, to increase the investor base, transparency, and monitoring of outside shareholders and hence enhance the efficiency of investment. I contribute to the literature by investigating the changes in the investor base in terms of investor classes and ownership concentration. This investigation includes changes in the types of newcomer and exiting investor classes, changes in ownership structures, and ownership concentration.

Financial liberalization program and opening of a new stock exchange aimed to increase the financial literacy and investor base while contributing to the growth of Turkish companies by providing funding. An increase in financial literacy and investor base develops the financial literacy of Turkish investors about financial markets and investment options. As investors learn about the risks and return of financial instruments traded on organized stock exchange, the number of individuals who participate in the Turkish stock exchange as investors with their savings would increase eventually. The increase in the investor base would increase funding for Turkish companies as the ISE has an intermediate role between investors and fund-seeking companies. The result of a higher number of participants in the Istanbul Stock Exchange means more parties are monitoring the listed companies. That is because the new participants would make sure the companies are audited and managed well. Hence, opening a new stock exchange ends up with an increased financial literacy, shareholder monitoring, and investor base.

Baier, Dwyer JR. & Tramura (2004) also state that opening a new stock exchange boosts economic growth by increasing productivity. An increase in shareholder monitoring may positively affect productivity and firm performance. As Alexander & Mayer (1991) state, listed firms invest more and grow at a higher pace than unlisted firms. Listed firms become more powerful players in the industry, generate higher profits and pay out higher dividends and raise more equity finance. An increase in shareholder monitoring may affect the productivity of companies positively. Thus, Baier, Dwyer JR. & Tramura (2004) explain that opening a new stock exchange increases financial literacy and investor base which leads to higher monitoring activity. As a result of the higher monitoring activity, productivity, and economic growth are affected positively.

The sample covers the 40 companies that first listed on Istanbul Stock Exchange in 1986. Ownerhip data of six companies that ceased operations, one company that is listed in 1986 and 2020 but has no data for 1986 and two companies that went private is not available in 2020. Ownership data on the remaining 31 sample companies is available in 1986 and 2020. I measure how concentrated ownership is in the hands of the largest shareholders using three variables. First, the ownership concentration of the largest shareholder measures the percentage of shares that the largest shareholder holds. Second, the ownership concentration of the three largest shareholders measures the percentage of shares that the three largest shareholders holds. Third the ownership concentration of the five largest shareholders measures the percentage of shares that the five largest shareholders holds. I found that ownership concentration increases between 1986 and 2020 for Turkish listed firms. The mean ownership concentration of the largest shareholder increased from 34% to 59%, while the median ownership concentration of the largest shareholder increased from 31% to 55% between 1986 and 2020. The mean ownership concentration of the three largest shareholders increased from 61% to 74%, while the median ownership concentration of the three largest shareholders increased from 62% to 73% between 1986 and 2020. The mean ownership concentration of the five largest shareholders increased from 65% to 76%, while the median ownership concentration of the five largest shareholders increased from 69% to 73% between 1986 and 2020. In contrast, the goal of opening a new stock exchange was to disperse the ownership concentration of Turkish firms (Saracoglu, 1996). I found that state, banks and worker unions' ownership stake decrease while the ownership stake of family and business groups (or holding companies) in Turkish listed firms increase. Two sample companies had the Turkish state as the largest shareholder in 1986. In 2020, the number of companies whose largest shareholder is the state dropped to zero. Seven banks were the largest shareholders of listed companies in 1986. In 2020, only one bank is the largest shareholder of a sample company. Similarly, three companies had worker unions and foundations as the largest shareholder in 1986. In 2020, the number of companies whose largest shareholder is worker unions or foundations dropped to two. Furthermore, none of the sample companies had a family member as their largest shareholder in 1986. In 2020, there were three companies whose largest shareholder is a family member of related business group.

This thesis explores whether the ownership concentration increased throughout time. I analyze how ownership concentration changes to understand the changes in ownership structures of Turkish listed firms. A decrease in ownership concentration over time implies a broader investor base for the listed companies. The more we understand the changes in the investor base, we can analyze the changes in monitoring and productivity better as Baier, Dwyer JR. & Tramura (2004) states. According to the World Bank database (2022), the population of Turkey increased by 67% while World's population increased by 58% from 1986 to 2020. During the same 34 years, the real GDP of Turkey increased 851% while the real GDP of World increased 459%. Considering the increase in population and GDP, the number of investors in the Istanbul Stock Exchange may increase naturally as well. The first goal of structural adjustments and financial liberalization program was to attract new domestic and foreign investors. The second goal of the program was to decrease the prevalance of state-owned enterprises. That is why, in order to analyze the changes in the investor base and ownership structures of listed firms, I focus on changes in investor classes and ownership concentration instead of the changes in the number of investors.

Yurtoglu (2000), Gökşen & Üsdiken (2001), Demirag & Serter (2003), Colpan (2010), and Colli & Colpan (2016) investigate the Turkish stock market and ownership structures. These papers focus on the characteristics of the ownership structures of Turkish companies either at a given point in time or for a short time period. This paper contributes to the literature by investigating a longer time period from 1986 to 2020. The rest of the paper will be as follows, Section II describes the background of the Turkish Stock Exchange market, Section III reviews the literature, and develops the testable hypothesis, Section IV explains the research method, Section V describes data and sampling framework. Finally, Section VI presents empirical results and Section VII concludes.

CHAPTER II

BACKGROUND

The first stock-trading activities dated back to the Ottoman Empire's Crimean War in 1854 (Borsa İstanbul, 2010). As a result of the war, Ottoman Empire's debt increased. Foreign traders started to trade the government bonds that are issued after the Crimean War in Galata, İstanbul Karslı (1989). At that time, the necessity of a trading platform emerged, and Galata traders found an association in 1864 for trading Ottoman government bonds.

With the initiatives of the individual debtholders of the Ottoman Empire and the support of foreign countries, the first official trading platform was founded in 1873 for government bonds of the Ottoman Empire called "Dersaadet Tahvilat Borsası" (Borsa İstanbul, 2010). This trading platform became the first stock exchange in Turkey. Both domestic and international bonds and shares are traded on the stock exchange (İMKB, 2000). There are documents showing that wealthy Turkish families traded Panama bonds and shares in the Suez Canal. According to Pamuk (2000), as the economy of the Ottoman Empire experienced budget deficits and credit crunch, Galata bankers collaborated with European capital holders and invested in Ottoman Empire's short-term debt.

After the World War I and the Independence War of the Republic of Turkey, nationalization and economic policies in which the state became the dominant investor rose, and the investment by international investors decreased in Turkey (Aykac, 2020). During the World War II, almost all of the economic activities came to a standstill in Turkey and stock exchanges reached their pre-war volume years after the war (Fertekligil, 2000).

After the Independence War of the Republic of Turkey, Mustafa Kemal Atatürk founded Türkiye İş Bankası, which is one of the first companies established in the Republic of Turkey, as a public company listed on the Turkish Stock Exchange. Over time, the existing stock exchange did not develop and therefore, the need for a modern Turkish Stock Exchange emerged after the banker crisis (Borsa İstanbul, 2010). The modern and regulated Turkish stock exchange was established in 1985 as a part of the financial liberalization program of the Turkish government (Saracoglu, 1996; Tanyeri, Öztürkkal, Tırtıroğlu, 2022). The program aimed to boost the economic growth of Turkey by encouraging non-government investors to take active roles in the Turkish economy. The active participation of investors would mean a transfer of the ownership stakes of state-owned companies to investors. This would result in a liberal and free economy as the millennium approaches.

CHAPTER III

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

3.1 Literature Review

The Turkish government in the 1980s aimed to implement structural adjustment policies (Saracoglu, 1996). Turgut Özal who was the prime minister of Turkey in the 1980s, claimed that the advancement of the financial institutions was a requirement for implementing the structural adjustment policies (Saracoglu, 1996). The regulators would be able to implement their policies better with the developed financial institutions. That is why, the modern Turkish stock exchange, Istanbul Stock Exchange (ISE), is established by the government. Levine (1997) states that there is a positive and first-order relationship between financial development and economic growth. He argues that the developments of the financial markets and the institutions are inseparable part of economic growth.

One of the main reasons for opening a new stock exchange in Turkey was the Banker crisis that occurred in the 1980s (Borsa İstanbul, 2010). After the banker crisis, the need for a new financial system to protect the savings of citizens emerged. That is why, Turkish policymakers opened a stock exchange in order to support the growth of financial markets.

Minier (2001) directly analyzes how opening a new stock market affects economic growth. She chronicles the experiences of seventeen countries that opened stock exchanges between 1952 and 1987. She examines the growth of GDP per capita immediately following the opening of the stock market compared to the similar countries that do not open a stock market. Her paper explores developing countries similar to Turkey. The period that is covered in the paper is also close to the opening of ISE. The finding of the paper suggests that there is a significant correlation between opening a new stock exchange and economic growth. The results also support the stated goals of the financial liberalization program and the opening of a new stock exchange to boost economic growth, develop financial markets, and protect investors from possible crises.

Baier, Dwyer JR. & Tamura (2004) also show that economic growth increases relative to the rest of the world after a stock exchange opens in total of 32 countries including emerging markets similar to Turkey such as Australia, Brazil, Belgium, Tunisia and Venezuela. The paper investigates the reasons for the increase in economic growth. The empirical results show that increased growth of productivity is the primary way that a stock exchange increases the growth rate of output, rather than an increase in the growth rate of physical capital. Productivity is defined as the ratio between the output volume and the volume of inputs (Krugman, 1994). Thus, productivity increases as the inputs are used more efficiently. As Baier, Dwyer JR. & Tamura (2004) explain, opening a new stock exchange increases productivity, meaning that a new stock exchange leads to better and more efficient usage of inputs. A new stock exchange can lead to more efficient use of resources in two ways. First, the funds of investors transfer through the stock exchange to the fund seeker companies that have profitable projects but insufficient funds. Secondly, investors monitor the publicly traded companies in the new stock exchange. With increased monitoring, the companies can be managed better compared to the non-traded companies. Better management leads to more output and higher productivity.

Claessens & Yurtoglu (2012) arguethat firms benefit from better corporate governance. Better corporate governance may lead to greater access to financing, lower cost of capital, superior company performance, and better treatment of all stakeholders. They state that the benefits of better corporate governance are not only at the firm level but also at the industry and country level as well. Since one of the benefits of opening of a new stock exchange is increasing the shareholder monitoring and the level of corporate governance, the results of better corporate governance is also linked with opening of the ISE.

In 1980s, Turkish financial liberalization program started to reach financial development and the positive effects of opening a new stock exchange investigated in the literature (Levine, 1997; Minier, 2001; Baier, Dwyer JR. & Tamura, 2004; Claessens & Yurtoglu, 2012). Particularly, ISE opening was one of the first steps in the financial liberalization program. Potential benefits of the new stock exchange were generating additional growth by increasing productivity with an increase in the number of investors from different segments, lower funding costs, and higher transparency and additional monitoring of outside shareholders to increase the efficiency of investment.

In this thesis, by investigating the changes in ownership concentration, we aim to document whether there is a notable change in the investor base in the ISE. Since the lower ownership concentration means a broader investor base, we will be able to observe whether the financial liberalization program reached its aim of an increase in the investor base between 1986 and 2020. The successful attainment of the intended positive effects from the financial liberalization program relied on the program's ability to expand and diversify the investor base, involving both a higher number of investors and a broader spectrum of investor types. Increased investor base from various investor segments such as individuals, corporations, banks, domestic and foreign funds, is a key element to reach lower funding costs, higher transparency, additional monitoring, and increased productivity.

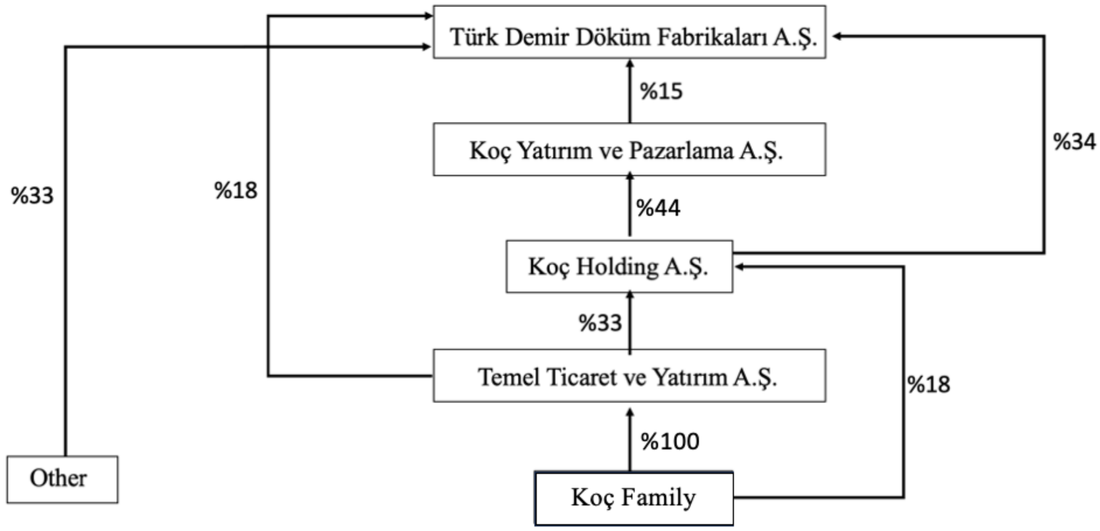
Yurtoglu (2000) shows, the ownership concentration of Turkish listed firms did not decrease from 1987 to 1997. Ownership did not evolve to dispersed ownership from a concentrated ownership structure throughout those ten years. Yurtoglu (2000) states that in Turkey, there is a family dominance in ownership and control of the firms in the private sector similar to some other developing countries such as Mexico. Many of the largest corporations in Turkey are affiliated with each other within a Business Group, abbreviated as BG. These Business Groups (BGs) consist of companies that stem from family investments. BGs revolve around a central holding company, which acts as the core entity, ensuring interconnectedness of group companies. The BGs in the Turkish market are very similar to the "insider system" of corporate governance defined by Franks and Mayer (1997). The insider system is characterized by few listed companies, large inter-corporate shareholdings, and a large number of substantial share stakes. The BGs in the Turkish market are owned and controlled by families. In these BGs, companies become each other's shareholders and this system becomes unavailable to the outsider new investors. The controlling family of BGs remains the only controller and owner of all of the companies within the system.

In their empirical work which they sampled 20 BGs of Turkey from 1980s to 1997, Gökşen & Üsdiken (2001) found that the family domination in ownership and management of business groups remains insensitive to the size and time of the founding of those groups. That means for most BGs of various sizes and ages, families protect their domination. This protection comes from complex or pyramidal ownership structures.

In the empirical work that samples the large enterprises in Turkey in 2007, Colpan (2010) claims that families control business groups through pyramids, complex intercorporate shareholding structures, and interlocking directorates. In pyramidal ownership structures, families tend to have stakes in their holding companies, which stand at the top of the pyramid. BGs hold shares of other companies in the portfolio of the family, and most of the companies in the family portfolio also hold some shares of each other. As a result, even the family members do not have shares of all companies that they invested in, they keep control of all of the companies that they invested in.

Figure 1 illustrates an example of a pyramidal ownership structure. I collect the ownership data for Türk Demir Döküm Fabrikaları A.Ş., Koç Yatırım ve Pazarlama A.Ş., and Koç Holding ownership structure data from the 1986 Annual Review of IMKB (1986). The 1986 Annual Review of IMKB (1986) is an annual booklet that is published by ISE at the end of each year to inform investors about the listed companies. This figure shows that in 1986, Vehbi Koç controls Türk Demir Döküm Fabrikaları Anonim Şirketi through a pyramidal ownership structure, without directly holding the shares of it. Other direct owners of Türk Demir Döküm Fabrikaları A.Ş. are the holding company of Koç family, Koç Holding with 34% of the stake, Koç Yatırım ve Pazarlama A.Ş. with 15% of the stake, which is also another Koç Holding owned company and Temel Ticaret ve Yatırım with 18% of the stake, which is also owned by Vehbi Koç. This type of ownership is called ultimate ownership by Yurtoglu (2000), identifying the owner at the bottom of the pyramid as the ultimate owner.

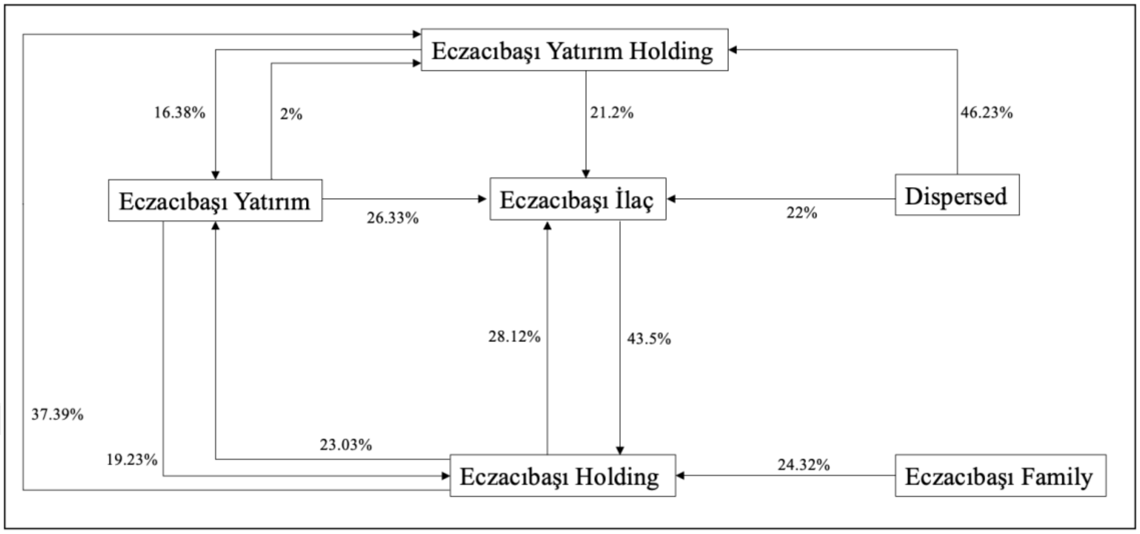
Figure 1. Pyramidal Ownership Structure



Yurtoglu (2003) states that similar to dual-class shares, pyramids are common devices that families use to separate their cash-flow rights from voting rights. The author shows that deviations in cash flow rights from voting rights lead to significantly lower market-to-book ratios. He suggests the reason behind this is the large agency costs because of the conflict of interests between minority shareholders and controlling shareholders.

Complex ownership structures have the same goal to control firms without a corresponding investment in shares. In complex ownership structures, there is no straightforward chain as pyramids, but the companies in a family portfolio hold each other's shares without any chain order. By owning the holding companies' shares, families reach control of all of the companies that they invested. Figure 2 is an example of a complex ownership structure from Yurtoglu (2000). Figure 2 illustrates the complex ownership structure of Eczacıbaşı Group.

Figure 2. Complex Ownership Structure



Source: Yurtoglu, B. B. (2000). Ownership, control and performance of Turkish listed firms. *Empirica*, *27*, 193-222.

In this complex ownership structure, only owning 24.32% of shares of Eczacıbaşı Holding, the Eczacıbaşı family controls %87.05 of Eczacıbaşı Holding. Following the same strategy, the Eczacıbaşı family controls other companies within the group such as Eczacıbaşı Yatırım, Eczacıbaşı Yatırım Holding, and Eczacıbaşı İlaç. Since companies in the Eczacıbaşı Group hold each other’s shares, ownership and control are separated through a complex ownership structure.

3.2 Hypothesis Development

Considering the Business Group system, pyramid, and complex ownership structures, opening a new stock exchange would not enable investors to control any company involved in one of these structures unless families choose to disolve the control system.

As Demirag & Serter (2003) and Yurtoglu (2000) show, no separation of ownership and control is achieved through pyramidal and complex ownership structures in the presence of business groups. In this thesis, I investigate the types of owner classes and ownership concentration to see whether the financial liberalization program actually increased the investor base or there is still concentrated ownership in Turkish listed companies with pyramidal and complex ownership structures.

Yurtoglu (2000) describes the complex and pyramidal ownership structures. The author discusses how the separation of ownership and control may amplify the agency costs in the vein of the theoretical model of Jensen and Meckling (1976). The ownership concentration did not change in Turkey over time, the concentrated ownership structures are still common for most of the listed companies (Yurtoglu, 2000). However, mainly as a result of the ongoing privatization program, the shareholdings of the state were reduced. Another trend is that individuals and families tend to reduce their shareholdings (Yurtoglu, 2000). In companies, which belong to a BG, the direct shareholdings of families are reduced and concentrated in the holding companies. In companies, which are not a subsidiary of another company, individuals and families reduce their ownership stakes by selling small fractions of their holdings over time, but these fractions are not significant enough to reach dispersed ownership (Yurtoglu, 2000).

Yurtoglu (2000) and Gökşen & Üsdiken (2001) show that the ownership concentration did not decrease for listed firms in Turkey throughout the years. Yurtoglu (2000) states that the privatization program transferred the shares of companies that are owned by the Turkish state to the BGs in Turkey. However, the investor base did not increase in a way that includes various-sized individual and corporate investors as a result of the financial liberalization program. If this is the case, one can be skeptical about the achievement of other goals of the financial liberalization program as well, such as a decrease in funding costs, and an increase in transparency and monitoring. The reason for that is all of the goals of the financial liberalization program are interconnected. However, the studies on this topic are from the early 2000s. When we take the fast-paced, dynamic economic environment of emerging markets such as Turkey into account, it may be possible to see dramatic changes over time compared to the developed countries with stable financial and economic environment. Considering the gap in the literature that there is no such recent work investigating the changes in ownership concentration, this paper builds a hypothesis on the changes in ownership structures and concentration from the first year of 1986 to 2020. That is why, I hypothesize that given that there are complex and pyramidal ownership structures and BGs of families, there will be no significant change in ownership concentration. Moreover, the ownership concentration may be increased. This hypothesis puts light on future research that investigates whether the other goals of the policymakers are not reached with the opening of a new stock exchange under the financial liberalization program as well if the null hypothesis is true. The alternative hypothesis can be that there is a significant change in ownership concentration which became either more dispersed or concentrated than it was in the opening year of ISE, which leads us to the conclusion that the investor base may increased or decreased. If the alternative hypothesis is true, with the increased investor base, further research may also show that lower funding costs became accessible, and transparency and monitoring increased. This means that the financial liberalization program reached its goals since all of them are connected.

Null hypothesis: Ownership concentration of Turkish listed firms that became public with the opening of a new stock exchange did not change from 1986 to 2020.

Alternative hypothesis: Ownership concentration of Turkish listed firms that became public with the opening of a new stock exchange changed between 1986 and 2020.

CHAPTER IV

RESEARCH METHOD

The null hypothesis holds that ownership concentration does not change in the thirty four years following ISE opening in 1986. I use univariate and multivariate analysis to test the null hypothesis. Equation 1 shows the null hypothesis.

$$H_0 = \mu_{1986} = \mu_{2020} \qquad [1]$$

where μ is the ownership concentration. μ_{1986} is the ownership concentration in 1986, and μ_{2020} is the ownership concentration in 2020.

I used three different variables to assess ownership concentration in 1986 and 2020. I used the largest, three largest, and five largest shareholders ownership stake similar to Zeitun (2009). The largest shareholder is the shareholder who has most number of the shares in a company. The three largest shareholders are the three shareholders with the most number of shares in a company. The five largest shareholders are the five shareholders with the most number of shares in a company. During calculations of the largest, the 3 largest, and the 5 largest shareholders, shareholders who hold shares that are in the market as free float are not included, since free float represents retail investors with small ownership.

4.1 Univariate Analysis of Changes in Ownership Concentration

After calculating the largest, 3 largest, and 5 largest shareholder variables, I aim to assess whether the ownership concentration of Turkish-listed firms differ between 1986 and 2020. In order to assess the changes in the ownership concentration, I tested for the changes in the mean and median of the largest, three largest, and 5 largest shareholders' ownership concentration in 1986 and 2020. By running these t-tests, I test my hypothesis of there is no significant change in the ownership concentrations of Turkish listed firms that became public between 1986 and 2020.

I used paired t-tests to test the changes in the means of the largest, 3 largest, and 5 largest ownership concentration variables between 1986 and 2020. Equation 2 shows the t-test:

$$t = \frac{\bar{d}}{(\frac{sd}{\sqrt{n}})} \quad [2]$$

where t is the test statistic (Student, 1908), n is the number of paired observations for the t-test. sd is the sample standard deviation of the paired differences. Equation 3 shows the standart deviation of the paired differences.

$$sd = \sqrt{\frac{\sum_{i=1}^{n}(d_i - \bar{d})^2}{n-1}} \quad [3]$$

I conducted the Wilcoxon signed-rank test to test the changes in the medians of the largest, 3 largest, and 5 largest ownership concentration variables between 1986 and 2020. Equation 4 shows the Wilcoxon signed-rank test.

$$T = \sum_{i=1}^{n} sgn(d_i) \text{ x } R_i \qquad [4]$$

where T is the signed-rank sum, T^- is the sum of ranks for the negative d_i values, T^+ is the sum of ranks for the positive d_i values, W is the test statistic for the Wilcoxon signed-rank test that is found with the min(T^-, T^+) function, d_i represents the differences between the paired observations, $sgn(d_i)$ is the sign function that returns +1 if $d_i > 0$, -1 if $d_i < 0$, and 0 if $d_i = 0$. R_i is the rank assigned to the absolute value of the i-th difference. I chose the Wilcoxon signed-rank test since it is used for comparing the medians of ownership concentration of two paired groups or samples (Mavruk, T., Overland, C., & Sjögren, S., 2020).

4.2 Merger and Acquisitions of Sample Companies

After calculating the changes in ownership concentration variables and testing their significance, I analyze the merger and acquisition activity of sample companies. I search for merger and acquisition (M&A henceforth) deals where sample companies are the target company. I compile those deals that sample companies are target and the date of the deals, names of the acquirers, and shares of initial and new majority shareholders. Using the M&A activities of sample firms, I explore which M&A deals lead to the changes in ownership concentrations I observe. I also explain the owner classes involved in those deals, and what were the acquirer and exiting owner classes between 1986 and

2020. I investigate the ownership stake of initial and new shareholders. In addition, I examine sample companies whose largest shareholder did not change between 1986 and 2020. These companies have not taken part in any M&A deals as target companies. I compile the list of the largest shareholders that did not change from 1986 to 2020.

4.3 Multivariate Analysis of Changes in Ownership Concentration

Once finding the difference between the means and medians of ownership concentration variables in 1986 and 2020, and analyzing how the ownership structures evolved for listed companies, I run three regression models. I investigate what factors may affect the changes in ownership concentration. The regression models use the 1986 income statement and balance sheet data of companies which are net profit, total assets and total liabilities in order to explain changes in the largest, three largest, and five largest ownership concentration. I analyze whether the size, leverage and profitability performance can explain the changes in ownership concentration for the sample companies. I chose total assets since it represents the size of a company. While creating the regression models, I took natural logarithm of total assets. I used leverage which equals to total liabilities to total assets ratio for each sample company, and I used return on assets to represent the profitability performance of the sample companies in relation to their size. Equation (5), Equation (6) and Equation (7) show the three regressions where i represents the sample companies.

$$\text{Change in Ownership Concentration of the Largest Shareholder}_i = \beta_0 + \beta_1 (\ln(\text{Total Assets}_i) + \beta_2 (\text{Leverage Ratio}_i) + \beta_3 (\text{Return on Assets}_i) + \varepsilon_i \quad (5)$$

$$\text{Change in Ownership Concentration of the Three Largest Shareholders}_i = \beta_0 + \beta_1 (\ln(\text{Total Assets}_i) + \beta_2 (\text{Leverage Ratio}_i) + \beta_3 (\text{Return on Assets}_i) + \varepsilon_i \quad (6)$$

$$\text{Change in Ownership Concentration of the Five Largest Shareholders}_i = \beta_0 + \beta_1 (\ln(\text{Total Assets}_i) + \beta_2 (\text{Leverage Ratio}_i) + \beta_3 (\text{Return on Assets}_i) + \varepsilon_i \quad (7)$$

CHAPTER V

DATA & SAMPLING FRAMEWORK

I select the companies that were listed during the first year of ISE as the initial sample. I chose this sample to investigate the changes in ownership structures from 1986 to 2020. The reason that I worked on the data of those two years is the ISE is established in 1986 and I started to work on this thesis with data collection in 2020. That is why, this thesis explains changes in ownership structures of Turkish listed firms between 1986 and 2020. I sampled companies that were public in 1986 from the 1986 Annual Review of İMKB (1986). ISE published an annual review of companies listed starting in 1986. This book provides brief information about 40 companies that listed on ISE in 1986, and their industries, financial information including income statement and balance sheet, and ownership structures. Borsa Istanbul (2023) reports that 63 firms first started trading on the exchange in 1986. In 1986, out of 63 listed companies, 1986 Annual Review of İMKB (1986) covered 40 companies. From those 40 companies, 1986 Annual Review of İMKB (1986) does not include the ownership data of Sarkuysan

Elektrolitik Bakır Sanayi A.Ş.. That is why I do not include Sarkuysan Elektrolitik Bakır Sanayi A.Ş. in the sample.

5.1 Tracking the Sample Companies

Out of 39 companies with ownership data in 1986, six of them are not included in the sample in as they do not continue their operations in 2020. Four of the six firms stopped operations because of bankruptcy, one of them is subsumed into its holding company and one of them was first acquired by a foreign international firm and later decide to cease operations. The firms that went bankrupt are Çukurova Elektrik, Metaş İzmir Metalurji Fabrikası Ticaret A.Ş., Polylen Sentetik İplik Sanayi A.Ş., and Rabak Elektrolitik ve Bakır Mamulleri A.Ş. (Milliyet, 2003; Yeni Asır, 2010; Hürriyet, 1999; Hürriyet, 2000). Koç Yatırım ve Sanayi Mamulleri Pazarlama A.Ş. is subsumed by Koç Holding (Hürriyet, 1997). Swedish Match bought Kav Orman Sanayi but they ended operations in 2006 (Aydınses Gazetesi, 2013).

Table 1 tabulates the list of companies that stopped their operations between 1986 and 2020. All of the companies stopped their operations within 11 years. That period equals about one-third of the timeline that I examine in this study. Therefore, more than 10% of our initial sample declared bankruptcy or decided to close the business in almost a decade.

Table 1. List of Exiting Companies

Exiting Companies	Year of Exit
Çukurova Elektrik	2003
Koç Yatırım ve Sanayi Mamulleri Pazarlama A.Ş	1997
Kav Orman Sanayii A.Ş.	2006
Metaş İzmir Metalurji Fabrikası Ticaret A.Ş.	2010
Polylen Sentetik İplik Sanayi A.Ş.	1999
Rabak Elektrolitik Bakır ve Mamulleri A.Ş.	1993

5.2 The Final Sample and Descriptive Statistics

I compiled the 1986 ownership data of the 33 sample companies still in operation in 2020 from the 1986 Annual Review of İMKB (1986).

For the 2020 ownership data, I contacted Merkezi Kayıt Kuruluşu, (abbreviated as MKK), the Central Securities Depository of the Turkish Capital Markets. MKK provides its members with depository, trade repository and reporting, corporate governance, and investor services. MKK reported shareholder names, the TL value of shares held, the percentage of shares held as of the 2020 year-end for 352 companies. 27 of the firms in the 1986 sample have ownership data in the 2020 MKK data. There were 6 sample companies that were missing ownership information in the data provided by Merkezi Kayıt Kuruluşu. Those companies were the companies that are not listed on the Turkish Stock Exchange in 2020 but were actively in operation. For the companies that are not listed in Istanbul Stock Exchange but actively operating in 2020, I used Orbis Database to reach the ownership data from Bilkent University Library. There were 6 private companies from the 1986 listed companies. I reached 4 of those companies' ownership data using Orbis Database, which are Aymar Yağ Sanayi, İzocam, Türk Demir Döküm, and Anadolu Cam. Orbis database does not provide ownership data on the remaing two private companies, Koruma Tarım and Nasaş Aluminyum,. The final sample includes 31 companies that listed in 1986 and are covered in the the 1986 Annual Review of İMKB (1986) and continue their operations as of 2020.

I checked the 2020 ownership data of the 27[1] sample firms using the 2020 annual reports on their websites. The 2020 Annual Reports state the identities of shareholders and the percentage of shares owned. The annual reports also state the portion of shares, free float, that is available for trade on Borsa Istanbul. According to Ding, Ni & Zhong (2016), a company's free float refers to the number of outstanding shares that are available to the public for trade. Naturally by construction, free float stakes are very small per investor and do not list investor identities. The ownership data in the annual reports are in line with the ownership data provided by MKK. I determined an ownership class for each shareholder of sample companies. Table 2 tabulates the ownership classes for 1986 and 2020.

[1] I could not find the annual reports of four delisted sample companies on the web.

Table 2. Shareholder Classes in 1986 and 2020

Panel A – Shareholder Classes in 1986

Name	Source
Bank	The Banks Association of Türkiye
Company	1986 Annual Review
Cooperative	1986 Annual Review
Family	Introductory Pages of Companies
Foundation	1986 Annual Review
Holding	1986 Annual Review
Other	1986 Annual Review
Political Party	1986 Annual Review
State	1986 Annual Review
Union	1986 Annual Review

Panel B – Shareholder Classes in 2020

Name	Source
Bank	The Banks Association of Türkiye
Company	MKK & Orbis Database
Cooperative	MKK & Orbis Database
Family	Introductory Pages of Companies
Fund	MKK & Orbis Database
Foundation	MKK & Orbis Database
Free Float	Annual Reports of Sample Companies
Holding	MKK & Orbis Database
Individual	MKK & Orbis Database
Other	MKK & Orbis Database
Political Party	MKK & Orbis Database
State	MKK & Orbis Database
Union	MKK & Orbis Database

Table 2 tabulates that there are 12 different shareholderclasses in our sample. I determined the ownership classes by investigating each shareholder. 10 of these shareholder classes are common for 1986 and 2020. Free float and individual ownership classes exist only in 2020 since 1986 Annual Review of İMKB (1986) does not report free float shares and there is not any individual shareholder other than controlling families in 1986.

For the banks, I used the banks database of The Banks Association of Türkiye, the regulatory board of banking in Turkey, called as Türkiye Bankalar Birliği (TBB) to identify shareholder classes of banks. The main role of The Banks Association of Türkiye is to preserve the rights and benefits of banks, carry out studies for the growth of the banking sector, strengthen competition power, follow the principles of open market economics and perfect competition, and adhere to the regulations and principles of banking. (TBB, 2020). The database available on their website provides a list of active banks in Turkey at a selected time. I accessed the list of banks for the year ends of 1986 and 2020. If the shareholder is another company, the shareholder class is determined as a company. For the family members related to the sample companies, the shareholder class is determined as family. Those family members are determined by their surname, or the introductory pages of companies that mention the founders and the families, which enables us to understand whether they are related to the companies or affiliated BGs. Non-family individuals who have stakes in a company are identified under the individual shareholder class. If the shareholder is the core company of a BG, I determine the shareholder class as holding since the name of the BGs include the "holding" word.

For the free float shares, I determined the shareholder class as the free float. The annual reports of sample companies state the free floating shares. I used annual reports to identify the free float shares. In 1986, since there is no available annual reports of sample companies. I identified unknown shareholders under other shareholder class. This class includes both free float shares and unknown small shares.

I determined the shareholder class of Cumhuriyet Halk Partisi shares as a political party. If the worker unions own shares in a company, I identified the shareholder classs as union. There are five different worker unions that are shareholders in our sample. All of the worker unions use the name that states they belong to the community of workers such as “personnel union”. Also, I identified Ordu Yardımlaşma Kurumu, abbreviated as OYAK as a union since it is military personnel’s union in Turkey. There is one foundation in sample, it’s name includes “foundation” word. Thus, I determined its shareholder class as foundation. Similarly, there are 3 different cooperatives who are shareholders in our sample. The names of these institutions include “cooperative” word. I identified the shareholder class of these institutions as cooperative.

When there are multiple shareholders from the same shareholder class for a particular company, the shareholder class is not written as a sum of shareholders within the same class, instead, it is written separately. The reason is to be able to observe how many shareholders a company has and what portion of the company each shareholder controls. This enables us to calculate the ownership calculation variables in our empirical work since they are independent shareholders.

Table 3, Table 4, Table 5, and Table 6 report the firms whose largest shareholder is the state, holdings, private companies and worker unions/foundations, respectively. The tables report names of the sample companies, owner classes of owners in 1986 and 2020, percentage of shares that the owners had in 1986 and 2020.

Table 3. State Owned Companies in 1986

Company Name	Shares in 1986	Owner Class	Shares in 2020	Owner Class
Çelik Halat ve Tel Sanayii A.Ş.	30%	State	70%	Holding
	19%	Bank	21%	Free Float
	13%	Bank	9%	Fund
	7%	Holding		
	6%	Bank		
	26%	Other		
Ereğli Demir ve Çelik Fabrikaları A.Ş.	26%	State	49%	Holding
	26%	Bank	7%	Company
	1%	Bank	5%	Fund
	0%	State	39%	Free Float
	40%	Other		
	8%	Company		

Table 3 illustrates that there were two companies whose largest shareholder was the state in 1986. Both companies are in the metal industry. In 1986 state owned 30 percent of shares in Çelik Halat ve Tel Sanayii A.Ş. and 26 percent of shares in Ereğli Demir ve Çelik Fabrikaları A.Ş. In 2020, Doğan Holding owned 70 percent of shares in Çelik Halat ve Tel Sanayii A.Ş. and Ataer Holding owned 49 percent of shares in Ereğli Demir ve Çelik Fabrikaları A.Ş. In the thirty six years from 1986 to 2020, the state exited and Doğan Holding and Ataer Holding became the majority shareholder. Four different banks were shareholders of either one of these companies in 1986. Türkiye İş Bankası A.Ş. was a shareholder in both companies. Similar to the state, by 2020, banks had also sold their stakes in these two companies.

Table 4. Companies Whose Primary Shareholders Were Holdings in 1986

Company Name	Shares in 1986	Owner Class	Shares in 2020	Owner Class
Akçimento Ticaret A.Ş.	25%	Holding	40%	Holding
	13%	Company	40%	Company
	10%	Company	5%	Individual
	52%	Other	20%	Free Float
Arçelik A.Ş.	23%	Holding	41%	Holding
	21%	Company	12%	Company
	15%	Company	6%	Company
	15%	State	5%	Union
	26%	Other	37%	Free Float
Aymar Yağ Sanayii A.Ş.	33%	Company	66%	Family
	11%	Bank	12%	Family
	11%	Company	12%	Family
	10%	Company	10%	Family
	35%	Other		
Döktaş Dökümcülük Ticaret ve Sanayi A.Ş.	41%	Holding	96%	Holding
	14%	Company	4%	Free Float
	10%	Company		
	10%	Company		
	25%	Other		
Eczacıbaşı Yatırım Holding Ortaklığı A.Ş.	29%	Holding	82%	Holding
	12%	Company	18%	Free Float
	15%	Company		
	13%	Company		
	31%	Other		
Güney Biracılık ve Malt Sanayii A.Ş.	14%	Holding	43%	Company
	16%	Company	24%	Company
	25%	Bank	33%	Free Float
	26%	Company		
	19%	Other		

Table 4. (cont'd)

Company Name	Shares in 1986	Owner Class	Shares in 2020	Owner Class
İzmir Demir Çelik Sanayi A.Ş.	35%	Holding	58%	Company
	34%	Family	15%	Individual
	32%	Other	27%	Free Float
İzocam Ticaret ve Sanayi A.Ş.	25%	Holding	95%	Holding
	40%	Company	NA	Company
	10%	Company	NA	Company
	25%	Other		
Makina Takım Endüstrisi A.Ş.	47%	Holding	65%	Fund
	26%	Holding	35%	Free Float
	27%	Other		
Olmuksa Mukavva Sanayi ve Ticaret A.Ş.	25%	Holding	90%	Holding
	21%	Union	10%	Free Float
	19%	Bank		
	17%	Company		
	19%	Other		
Otosan Otomobil Sanayi A.Ş.	21%	Holding	41%	Company
	17%	Company	39%	Holding
	16%	Company	20%	Free Float
	46%	Other		
Türk Demir Döküm Fabrikaları A.Ş.	34%	Holding	100%	Company
	18%	Company		
	15%	Company		
	33%	Other		

Table 4 illustrates that there were 12 companies whose owners with the highest shares were holdings in 1986. In 2020 an investment fund took over the majority of the shares in one company and members of a family took over one company. The rest of the companies that were primarily owned by holdings are under the control of holdings and the companies within the same BGs.

Table 5. Companies Whose Primary Shareholders Were Other Companies in 1986

Company Name	Shares in 1986	Owner Class	Shares in 2020	Owner Class
Anadolu Cam Sanayi A.Ş.	34%	Bank	20%	Family
	19%	Bank	20%	Family
	19%	Company	20%	Family
	6%	Company	20%	Family
	22%	Other	20%	Family
Brisa Bridgestone Sabancı Lastik Sanayi ve Ticaret A.Ş.	46%	Bank	44%	Company
	13%	Union	44%	Holding
	11%	Company	13%	Free Float
	29%	Other		
Çimsa Çimento Sanayi ve Ticaret A.Ş.	31%	Bank	55%	Holding
	13%	Company	36%	Free Float
	12%	Union	9%	Company
	10%	Holding		
Ege Biracılık ve Malt Sanayi A.Ş.	37%	Company	43%	Company
	16%	Holding	24%	Company
	47%	Other	33%	Free Float
Ege Gübre Sanayii A.Ş.	19%	Bank	35%	Holding
	10%	Bank	23%	Family
	10%	Holding	42%	
	61%	Other		
Enka Holding Yatırım A.Ş.	30%	Company	50%	Holding
	21%	Family	8%	Family
	21%	Family	6%	Family
	16%	Foundation	6%	Foundation
	12%	Other	30%	Other
Good-Year Lastikleri Ticaret A.Ş.	51%	Company	75%	Company
	17%	Holding	25%	Free Float
	12%	Union		
	3%	Company		
	3%	Other		
	15%	Other		
Gübre Fabrikaları Ticaret A.Ş.	30%	Bank	76%	Cooperative
	13%	Cooperative	9%	Family
	8%	Cooperative	NA	Fund
	3%	Cooperative	NA	Fund
	46%	Other		

Table 5. (cont'd)

Company Name	Shares in 1986	Owner Class	Shares in 2020	Owner Class
Kartonsan Karton Sanayi ve Ticaret A.Ş.	14%	Company	34%	Holding
	10%	Bank	24%	Holding
			22%	Free Float
			19%	Company
Koç Holding A.Ş.	33%	Company	56%	Company
	18%	Family	6%	Family
	49%	Other	5%	Family
			25%	Free Float
Kordsa Kord Bezi Sanayi ve Ticaret A.Ş.	31%	Bank	71%	Holding
	14%	Union	29%	Free Float
	13%	Holding		
	10%	Company		
	32%	Other		
Türk Siemens Kablo ve Elektrik Sanayii A.Ş.	30%	Company	84%	Holding
	25%	Company	16%	Free Float
	15%	Holding		
	30%	Other		
Türk Şişe ve Cam Fabrikaları A.Ş.	88%	Bank	51%	Bank
	7%	Union	6%	Holding
	6%	Other	43%	Free Float
Turkiye Is Bankasi A.S.	36%	Union	37%	Union
	28%	Political Party	28%	Political Party
	12%	State	35%	Free Float
	24%	Other		

Table 5 illustrates 14 companies that were primarily owned by other companies in 1986. Out of those 14 companies, one company is primarily owned by a worker union, one company is primarily owned by family members, and one company is primarily owned by a cooperative in 2020. Six of the rest of 12 companies are primarily owned by holdings and the other five companies are primarily owned by companies in 2020. Table

4 and Table 5 show us that most of the listed companies in 1986 were primarily owned by BGs or related companies within the same BGs. This trend continues in 2020 as well considering the little changes over 34 years.

Table 6. Companies Whose Primary Shareholder Were Unions in 1986

Company Name	Shares in 1986	Owner Class	Shares in 2020	Owner Class
Bagfaş Bandırma Gübre Fabrikaları A.Ş.	11%	Union	38%	Family
	89%	Other	6%	Holding
			56%	Free Float
Bolu Çimento Sanayii A.Ş.	40%	Union	73%	Company
	35%	Company	27%	Free Float
	6%	Bank		
	19%	Other		
Hektaş Ticaret A.Ş.	53%	Union	54%	Union
	5%	Bank	46%	Free Float
	2%	Cooperative		
	39%	Other		

Table 6 shows the three companies that were primarily owned by unions in 1986. Out of the three companies, only Hektaş Ticaret A.Ş. is primarily owned by a union, Ordu Yardımlaşma Kurumu, in 2020. The other two companies are primarily owned by a family and a company. Table 6 shows that union dominant ownership structure also decreased over 34 years between 1986 and 2020.

5.3 Financial Statement Data for Sample Firms

I collected the 1986 financial statement data of sample companies from the 1986 Annual Review of İMKB (1986). The 1986 financial statement data includes net revenue, cost of goods sold, net profit, total assets, total liabilities, and shareholder's equity. Table 7 reports descriptive statistics on the financial statement data of sample companies.

Table 7. 1986 Financial Statement Data of Sample Companies

Panel A. Income Statement (in Million TL)

Name	Net Revenue	COGS	Net Profit
Median	21,780	11,338	2,122
Mean	52,638	41,935	3,548
Min	1,502	-	(1,207)
Max	623,337	563,406	32,269
Standard Deviation	117,554	104,967	6,282

Panel B. Balance Sheet (in Million TL)

Name	Total Assets	Total Liabilities	Shareholder's Equity
Median	18,410	9,068	7,137
Mean	107,085	89,170	17,914
Min	2,523	644	1,781
Max	2,421,109	2,249,736	171,373
Standard Deviation	432,054	401,810	36,074

Panel A of Table 7 shows that the median net revenue of sample companies is 21,780 million TL, with a minimum of 1,502 million TL and a maximum of 623,337 million TL in 1986. The mean net revenue is 52,638 million TL. Standard deviation of net revenue is 117,554 million TL. The median net profit is 2,122 million TL, with a minimum of -1,207 million TL and a maximum of 32,269 million TL. The mean net profit is 3,548 million TL. The standard deviation of net profit is 6,282 million TL in 1986.

Panel B of Table 7 illustrates that the median total assets of sample companies are 18,410 million TL, with a minimum of 2,523 million TL and a maximum of 2,421,109 million TL in 1986. The mean value of total assets is 107,085 million TL. The standard deviation of net revenue is 432,054 million TL in 1986.

İstanbul Sanayi Odası (İstanbul Chamber of Industry, ISO henceforth) lists the largest 500 industrial enterprises in Turkey annually since 1968 (İSO, 2022). ISO ranks enterprises bases on production based net revenues[2]. I collected the İSO500 list of 1986 to see how large the sample companies were in 1986. The İSO500 list includes sales revenues, total assets, shareholder's equity, export revenues, and the number of employees.

Table 8. Sample Companies and İSO500 List

(in m TL)	Sample Firms in İSO500 1986	Total İSO500
Number of Firms	26	500
Total Sales	1,007,146	15,093,242
Total Assets	840,454	13,417,040
Number of Employees	29,225	608,226

Table 8 illustrates information about sample companies that are listed in the İSO500 and all of the companies in the İSO500 list. Of the 31 sample companies, 26 of them are listed in the İSO500 list. Since the İSO500 list only includes manufacturing companies, 4 non-industrial sample companies are excluded. The non-industrial sample companies are Eczacıbaşı Yatırım Holding Ortaklığı A.Ş., Enka Holding Yatırım A.Ş., Koç

[2] Production-based revenues do not include goods that are sold as received, without going through the production process.

Holding A.Ş., and Türkiye İş Bankası Anonim Şirketi. The only company that was eligible to enter İSO500 but could not was Türk Siemens Kablo ve Elektrik Sanayii A.Ş.

The average sample company in İSO500 has a ranking of 138. That means not only almost all of the eligible sample companies entered into the İSO500 list, but also the average ranking of sample companies is higher than an average İSO500 company. The total sales revenue of 26 sample companies that are listed in the İSO500 list in 1986 is 1,007,146 million TL. The total sales revenue of 26 sample companies in the İSO500 list is equal to 7% of sales revenue of all of the İSO500 list in 1986. The total assets of sample companies in the İSO500 list are equal to 840,454m TL. The total assets of sample companies in the İSO500 consist of 6% of the İSO500 list. In 1986, sample companies in the İSO500 list have 29,225 employees, whereas the total İSO500 list has 608,226 employees. Considering 26 of 27 industrial companies entered into İSO500 list with an above-average ranking of 138, we can say that the sample companies were sizeable companies in Turkey in 1986.

5.4 Merger & Acquisition Activities of Sample Firms

In order to understand how the ownership structures of sample companies evolved between 1986 and 2020, I collected the lists of M&A deals from two different databases. I used the Securities Data Company (SDC) Platinum database for mergers and acquisitions data of sample companies from 1986 to 2016. Since SDC Platinum data was covering M&A transactions until 2016, I used the Bloomberg database to reach the list of transactions from 2016 to 2020. SDC and Bloomberg mergers and acquisitions databases report M&A transactions from all over the world. I gathered a list of every M&A deals in which the sample companies were target companies. I reached the names of acquirer companies and details of M&A deals such as the date and stake of acquirers from SDC and Bloomberg databases. I analyzed changes in ownership structures of sample companies using the mergers and acquisitions data.

CHAPTER VI

EMPIRICAL RESULTS

6.1 Descriptive Statistics

Table 9 reports the mean, median, minimum, maximum, and standard deviation for the largest, three largest, and five largest ownership concentration of sample companies in 1986 and 2020.

Table 9. 1986 And 2020 Descriptive Statistics of Ownership Concentration Variables

Panel A. Descriptive Statistics of Sample Companies in 1986.

	Largest Shareholder	Three Largest Shareholders	Five Largest Shareholders
Median	0.31	0.62	0.69
Mean	0.34	0.61	0.65
Min	0.11	0.11	0.11
Max	0.88	0.94	0.94
Standard Deviation	0.14	0.16	0.17
Number of Firms	31	31	31

Panel B. Descriptive Statistics of Sample Companies in 2020.

	Largest Shareholder	Three Largest Shareholders	Five Largest Shareholders
Median	0.55	0.73	0.73
Mean	0.59	0.74	0.76
Min	0.20	0.44	0.44
Max	1.00	1.00	1.00
Standard Deviation	0.21	0.15	0.15
Number of Firms	31	31	31

In 1986, the median ownership concentration of the largest shareholder is 0.31 with a minimum score of 0.11 and a maximum score of 0.88. The mean value of ownership concentration of the largest shareholder is 0.34 in 1986. The standard deviation of the ownership concentration of the largest shareholder is 0.14 in 1986. On the other hand, the median ownership concentration of the largest shareholder is 0.55 in 2020 with a minimum score of 0.20 and a maximum score of 1.00. The mean value of ownership concentration of the largest shareholder is 0.59 in 2020. The standard deviation of the ownership concentration of the largest shareholder is 0.21 in 2020. When we look at the all of the Turkish listed companies including companies that are not in the sample, the average ownership concentration of the largest shareholder is 0.43. That means our sample companies have less concentrated ownership at the largest shareholder level compared to the listed companies in Turkey in 2020.

In 1986, the median ownership concentration of the three largest shareholders score is 0.62 with a minimum score of 0.11 and a maximum score of 0.94. The mean value of ownership concentration of the three largest shareholders is 0.61 in 1986. The standard deviation of the ownership concentration of the three largest shareholders is 0.16 in 2020. On the other hand, the median ownership concentration of the three largest shareholders score is 0.73 in 2020 with a minimum score of 0.44 and a maximum score of 1.00. The mean value of ownership concentration of the three largest shareholders is 0.74 in 2020. The standard deviation of the ownership concentration of the three largest shareholders is 0.15 in 2020. When we look at the all of the Turkish listed companies including companies that are not in the sample, the average ownership concentration of the three largest shareholders is 0.55. That means our sample companies have more concentrated ownership at the three largest shareholder level compared to the listed companies in Turkey in 2020.

In 1986, the median ownership concentration of the five largest shareholders is 0.69 with a minimum score of 0.11 and a maximum score of 1.00. The mean value of ownership concentration of the five largest shareholders is 0.65 in 1986. The standard deviation of the ownership concentration of the five largest shareholders is 0.17 in 2020. On the other hand, the median ownership concentration of the five largest shareholders is 0.73 in 2020 with a minimum score of 0.44 and a maximum score of 1.00. The mean value of ownership concentration of the five largest shareholders is 0.76 in 2020. The standard deviation of the ownership concentration of the five largest shareholders is 0.15 in 2020. When we look at the all of the Turkish listed companies including companies that are not in the sample, the average ownership concentration of the five largest shareholders is 0.56. That means our sample companies have more concentrated ownership at the five largest shareholder level compared to the listed companies in Turkey in 2020.

6.2 Univariate Test of Changes in Ownership Concentration

6.2.1. T-test for Changes in the Mean Value of Ownership Concentration

Table 10 shows the results of univariate tests for the three changes in ownership concentration variables. Concentration Ratio 1 (CR1) is the ownership concentration of the largest shareholder, Concentration Ratio 3 (CR3) is the ownership concentration of three largest shareholders, and Concentration Ratio 5 (CR5) is the ownership concentration of five largest shareholders.

Table 10. Univariate Test Results of Changes in Ownership Concentration

Panel A. Testing for Equality of Means

	1986 Mean	2020 Mean	T-test	P-value
CR1	0.34	0.59	-6,12	<.001
CR3	0.61	0.74	-3,58	<.001
CR5	0.65	0.76	-3,04	<.001

Panel B. Testing for Equality of Medians

	1986 Median	2020 Median	W-value	P-value
CR1	0.31	0.55	436	<.001
CR3	0.62	0.73	310	<.01
CR5	0.69	0.73	282	<.01

The results of the ownership concentration of the largest shareholder in 1986 ($M = 0.34$, $SD = 0.14$) and in 2020 ($M = 0.59$, $SD = 0.21$) indicate that ownership concentration increased for the largest shareholders, $t(30) = -6.12$, $p < .05$. This means the owner with the highest number of shares has more shares in 2020 than in 1986. These results support alternative hypothesis that the mean ownership concentration increased for the largest shareholders between 1986 and 2020.

The results of the ownership concentration of the 3 largest shareholders in 1986 ($M = 0.61$, $SD = 0.16$) and in 2020 ($M = 0.74$, $SD = 0.15$) indicate that ownership concentration increased for the 3 largest shareholders, $t(30) = -3.58$, $p < .05$. This means the combined percentage holdings of the 3 largest shareholders increased for Turkish listed firms between 1986 and 2020. These results support alternative hypothesis that the mean ownership concentration increased for the 3 largest shareholders between 1986 and 2020.

The results of the ownership concentration of the 5 largest shareholders in 1986 ($M = 0.65$, $SD = 0.17$) and in 2020 ($M = 0.76$, $SD = 0.15$) indicate that ownership concentration increased for the 5 largest shareholders, $t(30) = -3.04$, $p < .05$. This means the combined percentage holdings of five largest shareholders increased for Turkish listed firms between 1986 and 2020. These results support alternative hypothesis that the mean ownership concentration increased for the five largest shareholders between 1986 and 2020.

6.2.2. The Wilcoxon Signed-Rank Test for the Changes in the Medians of Ownership Concentration Variables Between 1986 and 2020

I conducted the Wilcoxon signed-rank test to compare the medians of ownership concentration of the largest shareholder in the years 1986 and 2020. The test yielded a significant result ($V = 30$, $p < .001$), indicating a highly significant difference in ownership concentration between the two time periods. The calculated W value for this test was 436 as Table 10 reports.

I conducted the Wilcoxon signed-rank test to compare the medians of ownership concentration of the three largest shareholders between 1986 and 2020. The test revealed a statistically significant result ($V = 93$, $p = .002$), indicating a significant difference in ownership concentration between the two time periods. The alternative hypothesis of a true location shift being not equal to zero was supported, indicating a notable change in shareholder ownership over the years. The calculated W value for this test was 310 as Table 10 illustrates.

I conducted the Wilcoxon signed-rank test to compare the medians of ownership concentration of the five largest shareholders between 1986 and 2020. The test yielded a statistically significant result ($V = 107$, $p = .006$), indicating a significant difference in ownership concentration between the two time periods. The calculated W value for this test was 282 as Table 10 reports.

Considering the results of the Wilcoxon signed-rank tests, there is a statistically significant difference between the medians of ownership concentrations of the largest, three largest, and five largest shareholders. This result is parallel to the changes in the means of ownership concentration of the largest, three largest, and five largest shareholders.

6.3 Who Are The Large Shareholders in 2020 versus 1986?

From 1986 to 2020, a remarkable shift in ownership concentration among shareholders is evident. In 1986, average shareholder holds %23 of shares of sample companies, meanwhile, in 2020, average shareholder holds %34 of shares of sample companies. Considering the significant difference in ownership concentration between 1986 and 2020, it is important to analyze the change in investor classes as well.

As can be seen in Table 3 and Table 6, in 1986, 2 companies had the state as their primary shareholder and three companies had worker unions/foundations as their primary shareholder out of 31 sample companies. In 2020, the number of companies that have the state as a primary shareholder dropped to 0. Also, the number of companies that have unions/foundations as primary shareholders dropped to two. The main reason for this trend is the financial liberalization program. These changes in ownership structures are similar to the findings in the literature. As Yurtoglu (2000) states, as a result of the financial privatization program, state ownership reduced over time.

In addition to the decrease in government and union ownership, in 1986, none of the companies in the sample had a family as their largest shareholder. However, there were three companies in the sample that have a family as their largest shareholder in 2020.

The increase in ownership concentration means a less dispersed ownership structure. This trend resulted in a decrease in the number of ownership classes. Even some of the ownership classes were eliminated from our sample as primary owners such as the state.

Considering the ownership accumulates in holdings, related companies, or families in 2020 with a significant increase in ownership concentration variables compared to 1986, we reject the null hypothesis.

I found that the ownership concentration of Turkish listed firms between 1986 and 2020 significantly decreased. Using the SDC and Bloomberg data, I investigated sample companies in terms of changes in largest shareholders between 1986 and 2020. Table 11 shows the 22 companies whose largest shareholders changed between 1986 and 2020. Table 12 reports the initial and new largest shareholder, the year of the deal that the initial largest shareholder exited, and shares of the initial and new largest shareholder.

Table 11. Companies Whose Largest Shareholder is Changed

Company Name	Deal Year	Initial Majority Shareholder	Stake of Initial Majority Shareholder	New Majority Shareholder	Stake of New Majority Shareholder
Çelik Halat ve Tel Sanayii A.Ş.	1997	Türkiye Elektrik Kurumu	30%	Doğan Şirketler Grubu Holding	70%
Ereğli Demir ve Çelik Fabrikaları A.Ş.	2006	Türkiye Demir ve Çelik İşletmeleri	26%	Ataer Holding Anonim Şirketi	49%
Aymar Yağ Sanayii A.Ş.	2002	Koç Holding A.Ş.	33%	Özyurt Family	100%
Döktaş Dökümcülük Ticaret ve Sanayi A.Ş.	2018	Koç Holding A.Ş.	41%	Çelik Holding Anonim Şirketi	96%
Güney Biracılık ve Malt Sanayii A.Ş.	2000	Ege Biracılık ve Malt Sanayi A.Ş.	26%	Efes Pilsen Group	100%
İzmir Demir Çelik Sanayi A.Ş.	2005	İzdaş Holding A.Ş.	35%	Şahin Koç Çelik Sanayi	58%
İzocam Ticaret ve Sanayi A.Ş.	2006	Temel Ticaret ve Yatırım A.Ş.	40%	Compagnie De Saint-Gobain	100%
Makine Takım Endüstrisi	2013	Transtürk Holding	47%	Gözde Girişim Sermayesi Ortaklığı	65%
Olmuksa Mukavva Sanayi ve Ticaret A.Ş.	2014	Hacı Ömer Sabancı Holding	25%	I. P. Container Holdings (Spain)	90%
Otosan Otomobil Sanayi A.Ş.	1996	Koç Holding A.Ş.	21%	Ford Motor Company	41%
Türk Demir Döküm Fabrikaları A.Ş.	2007	Koç Holding A.Ş.	34%	Joh. Vaıllant Gmbh & Co. Kg	100%
Anadolu Cam Sanayi A.Ş.	2007	Türkiye İş Bankası A.Ş	34%	Aziz Tasozu	20%
Brisa Bridgestone Sabancı Lastik ve Ticaret A.Ş.	1988	Akbank Ticaret A.Ş.	46%	Bridgestone Corporatıon	44%
Çimsa Çimento Sanayi ve Ticaret A.Ş.	2007	Akbank Ticaret A.Ş.	31%	Haci Omer Sabanci Holding	55%
Ege Biracılık ve Malt Sanayi A.Ş.	2000	Erciyas Biracılık ve Malt Sanayi A.Ş.	37%	Efes Pilsen Group	100%
Ege Gübre Sanayii A.Ş.	2001	Türkiye İş Bankası A.Ş	19%	Gençer Holding Anonim Şirketi	35%
Enka Holding Yatırım A.Ş.	2004	Enka İnşaat ve Sanayi A.Ş.	30%	Tara Holding A.Ş.	50%
Gübre Fabrikaları Ticaret A.Ş.	2009	T.C. Ziraat Bankası A.Ş	30%	Türkiye Tarım Kredi Kooperatifleri	76%
Kartonsan Karton Sanayi ve Ticaret A.Ş.	2001	Malazlar Kibrit Sanayi A.Ş.	14%	Pak Holding	34%
Kordsa Kord Bezi Sanayi ve Ticaret A.Ş.	2003	Akbank Ticaret A.Ş.	31%	Hacı Ömer Sabancı Holding	71%
Türk Siemens Kablo ve Elektrik Sanayii A.Ş.	2007	Siemens AG	30%	Draka Holding B.V.	84%
Bagfaş Bandırma Gübre Fabrikaları A.Ş.	2003	Yapı Kredi Bankası Mensupları Vakfı	11%	Recep Gençer	38%

Table 11 shows that the largest shareholders of 22 sample companies sold their shares. That means 71% of the sample companies' largest shareholders changed between 1986 and 2020. Out of 22 shareholders that exited over 34 years, there are seven holdings, six banks, six private companies (of which one of them is a foreign company), two state-owned companies, and one worker union. The ownership classes of entering largest shareholders are 11 holdings (of which three of them are foreign holdings), six private companies (of which three of them are foreign companies), three families or family members, one cooperative, and one investment fund. That means banks, state, and worker unions exited without replacements from the same ownership classes. The average stake of the initial largest shareholder is 30%, whereas the average stake of new majority shareholders is 67% in 2020. The reason for this is the new shareholders continue to increase their stakes by buying from other shareholders. Similar to our hypothesis, the increase in the average stakes of majority shareholders shows us the increase in ownership concentration between 1986 and 2020. 29% of our sample has the same largest shareholder over 34 years. Table 12 shows the companies whose largest shareholder did not change.

Table 12. Companies Whose Largest Shareholder is Not Changed

Company Name	Majority Shareholder	1986 Stake	2020 Stake
Akçimento Ticaret A.Ş.	Hacı Ömer Sabancı Holding	25%	40%
Arçelik A.Ş.	Koç Holding A.Ş.	23%	41%
Bolu Çimento Sanayii A.Ş.	Ordu Yardımlaşma Kurumu	40%	73%
Eczacıbaşı Yatırım Holding	Eczacıbaşı Holding A.Ş.	29%	82%
Good-Year Lastikleri A.Ş.	The Goodyear Tire and Company	51%	75%
Koç Holding A.Ş.	Temel Ticaret ve Yatırım A.Ş.	33%	56%
Türk Şişe ve Cam Fabrikaları	Türkiye İş Bankası A.Ş	88%	51%
Hektaş Ticaret A.Ş.	Ordu Yardımlaşma Kurumu	53%	54%
Türkiye İş Bankası A.Ş.	Türkiye İş Bankası Munzam Sandığı	36%	37%

6.4 Regression Models that Explore Factors that May Affect Changes in Ownership Concentration

Equation 5, 6, and 7 show the regression models. These models aim to show whether the size, leverage or profitability in relation to total assets of sample companies explain the changes in ownership concentration between 1986 and 2020. Table 13 reports the result of the multiple linear regression models for the largest, three largest and five largest shareholders. I test whether initial year return on assets performance explains changes in ownership concentration because Gaur, Bathula & Shing (2015) found that a lack of ownership concentration results in inferior performance. Önder (2003) finds that size increases as ownership concentration increases in Turkish firms. That is why, I also test whether size in terms of total assets or leverage explains changes in the ownership concentration of sample firms. However, in our sample and timeline, size, leverage or profitability in relation to total assets do not explain the changes in ownership concentration for the largest, three largest and five largest shareholders between 1986 and 2020.

Table 13. Impact of Profitability on the Changes in the Ownership Concentration

	Panel A: Changes in Ownership Concentration of the Largest Shareholder	Panel B: Changes in Ownership Concentration of the 3 Largest Shareholder	Panel C: Changes in Ownership Concentration of the 5 Largest Shareholder
Intercept	.60	.45	.33
	(.39)	(.35)	(.34)
ln(Total Assets)	-.06	-.05	-.04
	(.04)	(.03)	(.03)
Leverage	.22	.19	.342
	(.31)	(.29)	(.28)
ROA	.86	.12	.182
	(.59)	(.54)	(.53)
Degrees of Freedom	(3,27)	(3,27)	(3,27)
R-squared adj.	.11	-.03	-.01

Notes: * $p < .05$, ** $p < .01$, ***$p < .001$. The standard errors are in parentheses.

I used the multiple linear regression model to test whether size, leverage, and return on assets can significantly explain changes in ownership concentration of the largest shareholder between 1986 and 2020. Table 13 reports the result of the multiple linear regression model for the three shareholder. The overall regression model was not statistically significant ($R^2 = .11$, $F(3, 27) = 2.3$, $p > .05$). As a result of this multivariate test, first-year size, leverage, and return on assets do not explain the increase in the ownership concentration of the largest shareholder between 1986 and 2020.

I used the multiple linear regression model to test whether size, leverage, and return on assets can significantly explain changes in ownership concentration of the three largest shareholders between 1986 and 2020. Table 13 reports the result of the multiple linear regression model for the three largest shareholders. The overall regression model was not statistically significant ($R^2 = -.03$, $F(3, 27) = 0.67$, $p > .05$). As a result of this multivariate test, first-year size, leverage, and return on assets do not explain the increase in the ownership concentration of the three largest shareholders between 1986 and 2020.

I used the multiple linear regression model to test whether size, leverage, and return on assets can significantly explain changes in ownership concentration of the three largest shareholders between 1986 and 2020. Table 13 reports the result of the multiple linear regression model for the five largest shareholders. The overall regression model was not statistically significant ($R^2 = -.01$, $F(3, 27) = 0.9$, $p > .05$). As a result of this multivariate test, first-year size, leverage, and return on assets do not explain the increase in the ownership concentration of the five largest shareholders between 1986 and 2020.

None of the regression models were statistically significant. Therefore, the results of these models show that the size, leverage or return on assets of sample companies do not explain changes in ownership concentration between 1986 and 2020 neither for the largest, three largest, and five largest shareholders.

6.5 Summary of Hypotheses and Empirical Results

The empirical results showed that between 1986 and 2020 ownership concentration of sample firms increased. The increase in ownership concentration using the three measures (percent owned by the largest, three largest, and five largest shareholders) were statistically significant. This change tilted towards more concentrated ownerships of Turkish listed firms over 34 years. This finding is the opposite of the desired outcome of the financial liberalization program, which is a decrease in the ownership concentration and an increase in the investor base (Saracoglu, 1996). Considering the statistically significant increase in the ownership concentration of the largest, three largest, and five largest shareholders, we reject our null hypothesis that there is no change in ownership concentration between 1986 and 2020.

We reject the null hypothesis since the ownership concentration increased significantly between 1986 and 2020. These findings are similar to empirical findings of Yurtoglu (2000). Yurtoglu (2000) states, such as the ownership concentration of Turkish listed firms did not decrease from 1987 to 1997. Moreover, I found that there is an increase in the stakes of the remaining largest shareholders over time. I also found that while state and union ownership classes exit their strategies, family and holding ownership increased from 1986 to 2020. This finding is also parallel to the work of Gökşen & Üsdiken (2001), who state that family domination in ownership remains insensitive to size and time.

In addition to the statistical tests on changes in ownership concentration, I investigated the changes in the largest shareholders for our sample companies. 71% of the sample changed their largest shareholder. This resulted in more concentrated ownership over time since the new largest shareholders tend to have higher stakes than the initial largest shareholders. Banks, state, and worker unions are the ownership classes that prefer to exit as the initial majority shareholders. 29% of the sample has the same largest shareholder from 1986 to 2020. These largest shareholders are mostly related to prominent BGs of Turkey, or those BGs themselves. Even though the largest shareholder is not changed, ownership stakes of the remaining largest shareholders increased for eight of these nine companies. The increase in the stakes of the remaining largest shareholders leads to higher ownership concentration.

Finally, I ran three regression models with 1986 balance sheet and income statement data such as assets, liabilities, and net income as dependent variables. These models aim to show whether the size, leverage or return on assets of sample companies explain the changes in ownership concentration between 1986 and 2020. As a result, neither size nor leverage nor return on assets of sample companies does not explain changes in ownership structure in a statistically significant manner.

CHAPTER VII

CONCLUSION

In this thesis, I analyzed how ownership structures of Turkish listed companies changed between 1986 and 2020. I sampled the companies that were listed during the first year of the Turkish stock exchange and actively continues their operation in 2020. I collected the ownership, income statement, and balance sheet data of sample companies in 1986 and ownership data for 2020. I also compiled data on mergers and acquisitions of sample companies. Then I conducted t-tests and the Wilcoxon signed-rank test to compare the mean and median of ownership concentration of Turkish listed firms in 1986 and 2020. I found that there is a statistically significant increase in the mean ad median ownership concentration of the largest, three largest, and five largest shareholders.

After analyzing the M&A deals that sample companies were target companies, I found that family and holding companies replaced the state, banks, and union/foundation as majority shareholders in listed companies between 1986 and 2020. I found that 71% of sample companies' majority shareholder has changed. Incoming majority shareholders have higher stakes than the exiting majority shareholders on average. I also found that the average stake of the remaining 29% of sample companies' majority shareholders has increased from 1986 to 2020.

I ran three multiple regression models to analyse whether the financial statement variables may explain the changes in ownership concentration. I tested whether the size, leverage or return on assets of sample companies can explain the changes in ownership concentration between 1986 and 2020. None of the regression models were statistically significant.

The empirical results show that the ownership concentration increased significantly between 1986 and 2020. Shareholder classes changed from state, banks, and unions to families and their business groups. However, neither size nor leverage nor return on assets does not explain the changes in ownership concentration between 1986 and 2020 significantly.

These results suggest that the financial liberalization program started in the 1980s could not result in a dispersed ownership structure for Turkish listed firms, considering the increase in ownership concentration and the replacement of state, bank and union shareholder classes by families and holdings rather than dispersed ownership with possible additional shareholder classes.

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